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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,743	06/13/2006	Seok Soo Kim	930086-2029	5014

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EXAMINER	
BLAND, LAYLA D	
ART UNIT	PAPER NUMBER
1623	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,743	KIM ET AL.	
	Examiner	Art Unit	
	Layla Bland	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/13/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/13/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This application is a national stage entry of International Application No. PCT/KR03/02874, filed December 29, 2003, which claims priority to Korean Application No. 10-2003-0092005, filed December 16, 2003. Claims 1-13 are pending in this application and are examined on the merits herein.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 (and dependent claims) recites the limitation "adding 0.01-3.0 parts by weight for 1 part by weight of cellulose." It is unclear whether this refers to the caustic soda or the etherifying agent.

Claim 7 is drawn to the method of claim 5, and recites that it is preferable not to use a diluent gas to produce cellulose ether. Claim 5 requires the addition of a diluent gas; thus there is a contradiction.

Claim 12 recites "wherein the diluent gas is at least one ester compound(s) selected from dimethylether and diethylether. Dimethylether and diethylethers are not esters. It is assumed that "ester" should read "ether" in this claim.

Claim 13 is drawn to the method of claim 6, and recites that it is preferable not to use a diluent gas to produce cellulose ether. Claim 6, which depends from claim 5, requires the addition of a diluent gas; thus there is a contradiction.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Onda et al. (US 4,091,205, May 23, 1978, PTO-1449 submitted May 13, 2006).

Onda et al. teach a methylcellulose powder, having a particle distribution rate of 0 or 0.2% for particles of smaller than 100 mesh [column 6, Table III, No. 1a and No. 2]. Claim 8 is a product-by process claim. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted). The product-by-process claim was rejected because the end product, in both the prior art and the allowed process, ends up

containing metal carboxylate. The fact that the metal carboxylate is not directly added, but is instead produced in-situ does not change the end product.). See MPEP 2113.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onda et al. (US 4,091,205, May 23, 1978, PTO-1449 submitted May 13, 2006).

Onda et al. teach a process for preparing cellulose ethers comprising etherification of alkali cellulose followed by pulverization into a powder [see abstract].

Onda et al. teach a method wherein, starting from wood pulp, 100 parts of alkali cellulose, formed with sodium hydroxide, were placed into a reaction vessel and 15 parts of methyl chloride were added. The etherification reaction was carried out with stepwise elevation of temperatures; 40°C for 2 hours, then 50°C for 1 hour, then finally 80°C for one hour to produce the crude etherified product [column 6, Example 2]. The methylcellulose product was then pulverized to form a fine powder, having a particle distribution rate of 0-1.5% for particles of smaller than 100 mesh [column 6, Table III].

Onda et al. do not teach a method starting from pulverized cellulose and do not teach a method wherein the first, second, and third temperatures are 40-50°C, 55-60°C, and 85-90°C, respectively.

It would have been obvious to one of ordinary skill in the art to prepare cellulose ether from pulverized cellulose, employing the claimed temperature ranges. It has been held that merely reversing the order of steps in a multi-step process is not a patentable modification absent unexpected or unobvious results. Ex parte Rubin, 128 U.S.P.Q. 440 (P.O.B.A. 1959). Cohn v. Comr. Patents, 251 F. Supp. 437, 148 U.S.P.Q. 486 (D.C. 1966). Onda et al. disclose the use of temperatures which fall within those recited in claim 1, and are very close to those recited in the narrower claim 2. It is considered well within the skill of the skilled artisan to optimize these temperatures, especially given the guidance provided by Onda et al.

Claims 5-7 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onda et al. (US 4,091,205, May 23, 1978, PTO-1449 submitted May 13, 2006) as applied to claims 1-4, 9, and 10 above, and further in view of Hitchin et al. (GB 909,039, October 24, 1962).

Onda et al. teach as set forth above.

Onda et al. do not teach the use of a diluent gas.

Hitchin et al. teach the use of an inert diluent in the methylation of alkali cellulose with methyl chloride. Suitable diluents are dimethyl ether and diethyl ether. In diluting the methyl chloride, heat transfer is facilitated and the reaction can be controlled. The

diluent also functions as a vehicle in assisting the penetration of the alkali cellulose fibers by methyl chloride. The amount of diluent varies but good results were achieved using dimethyl ether as 45-90 percent by weight of methyl chloride [page 1, lines 61-78]. In one example, 600 lb of dimethyl ether was used for 320 lb of dry cellulose [page 2, Example 1].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a diluent in the above described method of Onda et al. The skilled artisan would have been motivated to do so and would have a reasonable expectation of success because Hitchin et al. teach that the use of an inert diluent such as dimethyl ether aids in controlling and facilitating the methylation of alkali cellulose.

A reference is good not only for what it teaches by direct anticipation but also for what one of ordinary skill in the art might reasonably infer from the teachings. (*In re Opprecht* 12 USPQ 2d 1235, 1236 (Fed Cir. 1989); *In re Bode* 193 USPQ 12 (CCPA) 1976). In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a). From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Layla Bland whose telephone number is (571) 272-9572. The examiner can normally be reached on M-R 8:00AM-5:00PM UST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Layla Bland
Patent Examiner
Art Unit 1623
November 5, 2007

Shaojia Anna Jiang

Supervisory Patent Examiner
Art Unit 1623
November 5, 2007